

# Climate Solutions University Forests and Water Strategies

## Rural Climate Adaptation: Elements Leading to Effective Implementation

National Adaptation Forum  
Denver, CO  
April 4, 2013





# Symposium Presenters:

Gwen Griffith – Curriculum Director



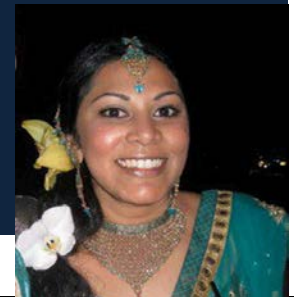
Julia Kintsch – Implementation Coordinator



Marcie Bidwell – Mountain Studies Institute



Vanitha Sivarajan – Development Director







# Today's Symposium Outline: Elements of Effective Implementation

- **Goals for Today's Dialogue**
- **Overview Climate Solutions University**
- **Elements of Planning**
- **Elements of Implementation**
- **Case Study from Colorado**
- **Elements of Funding**
- **Sharing and Using New Ideas**



# Goals for Today

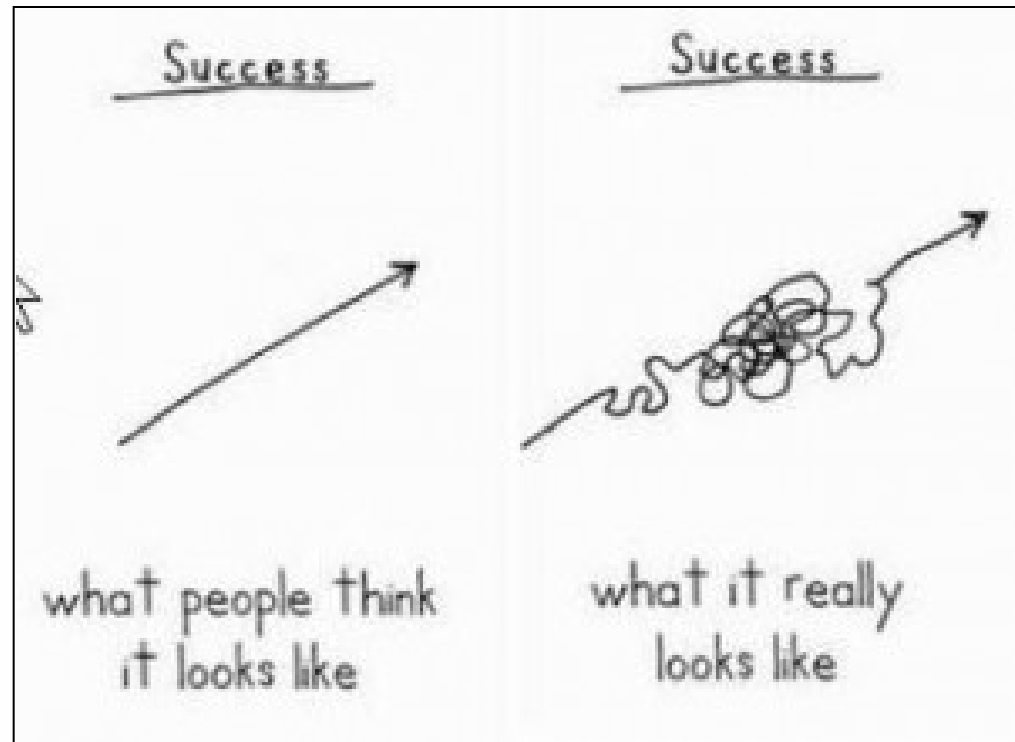
1. Two-way active dialogue
2. Share new ideas for effective implementation of adaptation strategies
3. Share factors for success
4. Share lessons learned
5. Using new ideas





# What are Successful Adaptation Outcomes?

- Ultimately more healthy people, forests, waters, and economic stability







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# Climate Solutions University: Collaborating Partners



## Model Forest POLICY PROGRAM

Sustainable Forests for Water and Climate Protection



## Cumberland River Compact

KY  
TN



*Enhancing water quality through  
education and cooperation*





## What We Do

Help **rural**, underserved communities to:

- Assess the impacts of climate change on their **forests, water and economics**
- Develop and implement climate **adaptation plans** to increase community resilience





# Multi-Year Program: 24 CSU Communities So Far



CSU Communities 2008-2013

## Plan Development Program (year 1):

- Team engagement
- Risk assessment  
forest, water, and  
economics
- Adaptation plan

## Implementation Program (years 2+):

- Support plan  
implementation





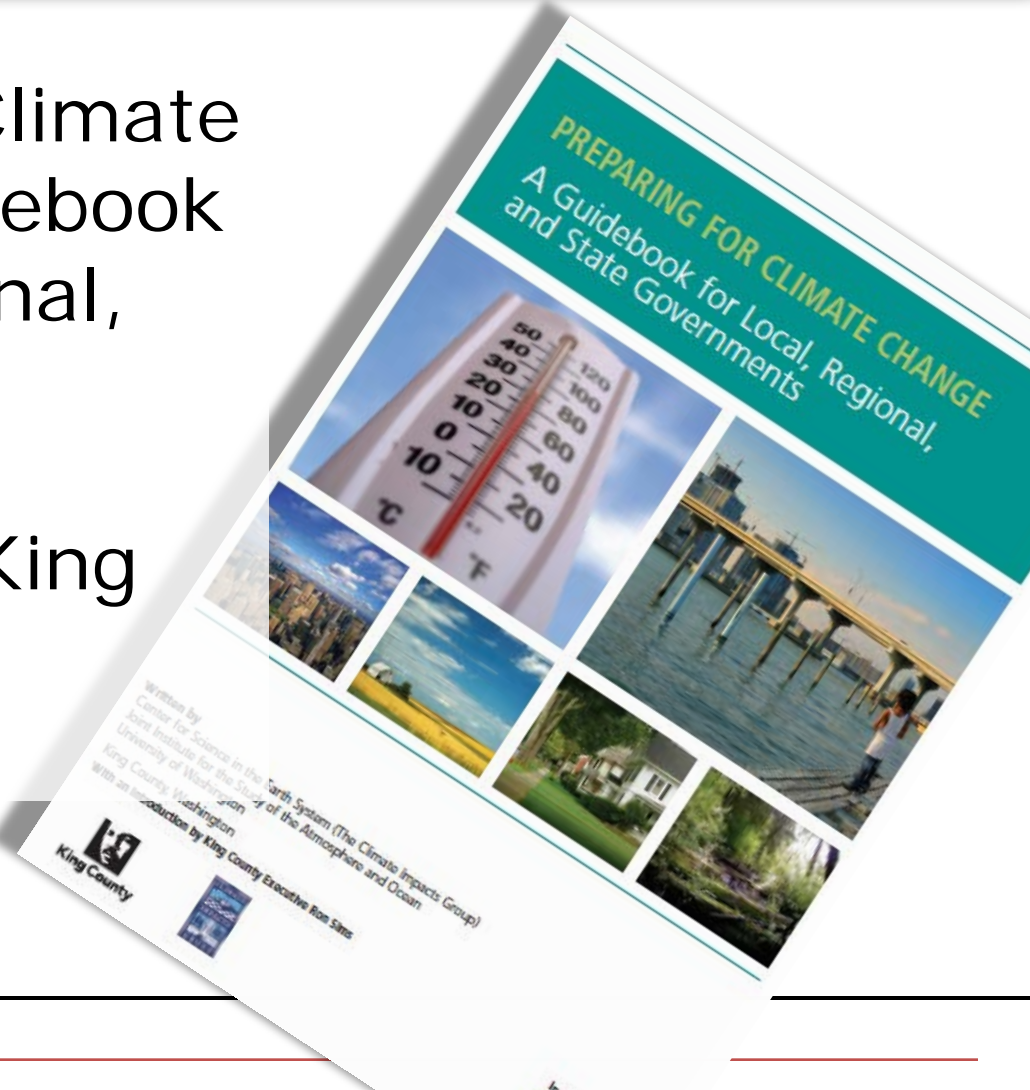
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# CSU Planning Process

"Preparing for Climate Change: A Guidebook for Local, Regional, and State Governments"  
(CIG, ICLIE & King County, 2007)





# Four Step Adaptation Process

1. Community Leader Forms Team / Leads Team Engagement
2. Assessment of Forest, Water, Climate, and Economic Risks and Opportunities
3. Develop Local Action Plan
4. Implementation of Plan





# Distance Learning with Virtual Classroom

1. 4-6 Communities per year
2. Webinar every two weeks
3. Step-by-step planning worksheets
4. Weekly one-on-one coaching
5. Peer-to-peer network
6. Plan review process





# Adaptation Planning Examples from CSU Communities





# Bonner County, ID 2008

- Forestry and tourism economy
- **Risks** – milfoil, more floods, forest & snow decline, weak riparian zones
- **Windows of opportunity**
  - Revising land use codes
  - Election year
- **Stakeholders:** education, policy,
  - County commissioner support
- **Successful candidate's forum**
- **Enhanced riparian zone codes**





# Cookeville, TN 2009 and Sumner County, TN 2010

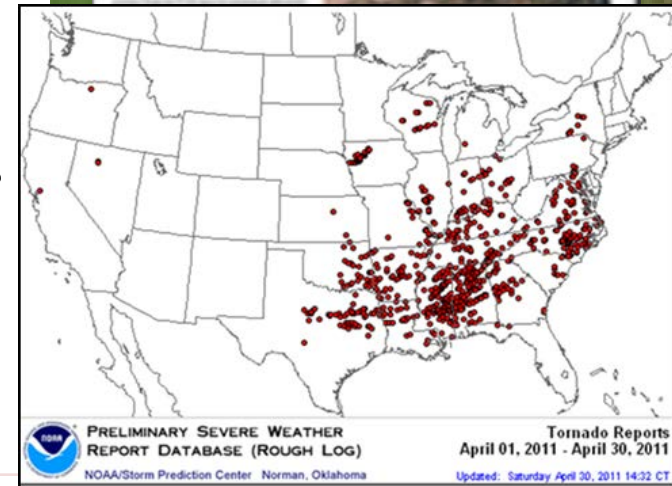
- Rural Middle Tennessee
- Risks: Floods, storms, health, population growth/climate refugees
- Comprehensive Planning Component

## **Cookeville:** "Stewardship Project"

- Business approach-"sustainable city"
- Mayor became champion
- First climate provisions in TN

## **Sumner County:** Planner led process

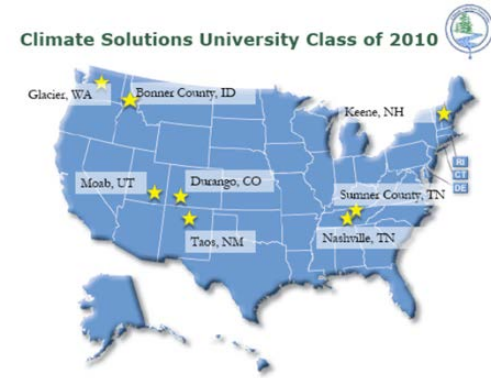
- Survey – strong public support
- Provisions for tree canopy, riparian zones, and steep slopes





## Taos, NM

- NGO / City Planner - Co-Leaders
- Risks: Water supply, forest fires, health
- Adopted water conservation ordinance



## Alstead, NH

- Led by Teacher / NGO Support
- Asheulot River Plan – first with climate provisions

## Moab, UT

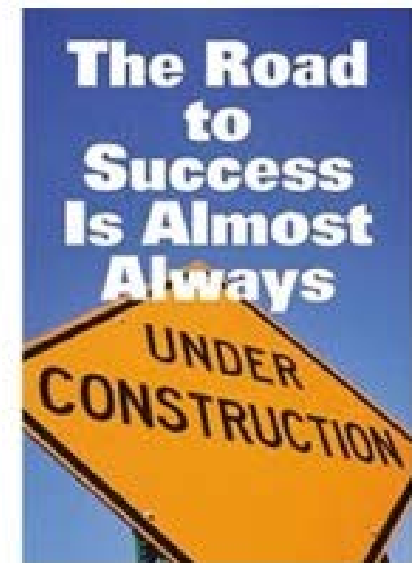
- NGO / Town Mayor – Co-Leaders
- Risk: Water supply, forest fires, grazing, dust-on-snow
- Grant launched new area watershed partnership
- Forging relationships with USFS and BLM



# Planning Factors for Success

## Three Major Categories:

- Organizational capacity to complete process
- Strong community process & communications
- Effective adaptation strategies in the plan





# Planning Factors for Success

## **Organizational capacity to complete process:**

- ✓ Funding & staff for planning and implementation
- ✓ Leadership continuity / co-leadership
- ✓ Durable plan champions and stewards
- ✓ Skills in leadership and facilitation
- ✓ Expertise in science and economics
- ✓ Skills in research, analysis, and writing
- ✓ Skills in outreach and communications





## Strong community process & communications:

- ✓ Active & diverse team engagement
- ✓ Stakeholder outreach during planning
- ✓ Strong educational plan in process
- ✓ Participatory decision-making
- ✓ Windows of opportunity
- ✓ Support of elected officials and agencies
- ✓ Local climate information and current impacts
- ✓ Communications—language, visuals, messengers





# Planning Factors for Success

## Effective strategies in plan:

- ✓ Focus on local impacts & solutions
- ✓ Prioritizing goals with risk matrix
- ✓ Multi-level benefits to strategies
- ✓ Multiple parties responsibility for implementation
- ✓ Authority to make decisions and take action
- ✓ Flexibility to address obstacles and barriers
- ✓ Adaptive management provisions
- ✓ Strong and specific implementation action plan

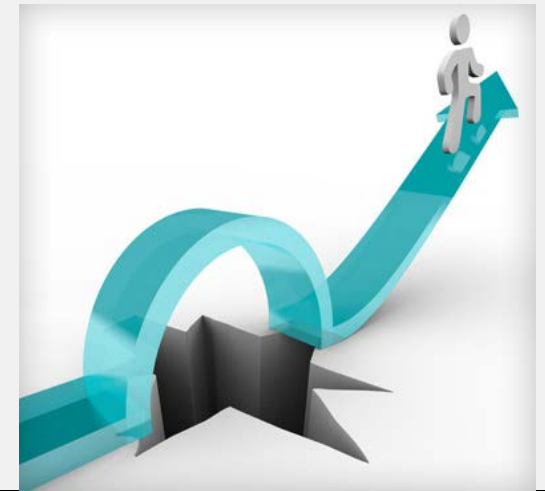






## *Pitfalls to Avoid Gleaned from 24 Communities*

- Doing it all yourself
- Dependence on a single leader
- Using technical jargon & complicated graphs
- Relying on global/national/regional data
- Directly confronting resistance & denial







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# **Adaptation on the Ground: Implementing Climate Planning**

The Model Forest Policy Program,  
Climate Solutions University

**Julia Kintsch**  
**Implementation Coordinator**



Forest and Water Resources  
Climate Adaptation Plan:  
Trinity County, CA



The Watershed Research and Training Center  
Author: Michelle Medley Daniel



Model Forest Policy Program | Cumberland River Compact

**CONGRATULATIONS!**

**You've completed  
your plan.**



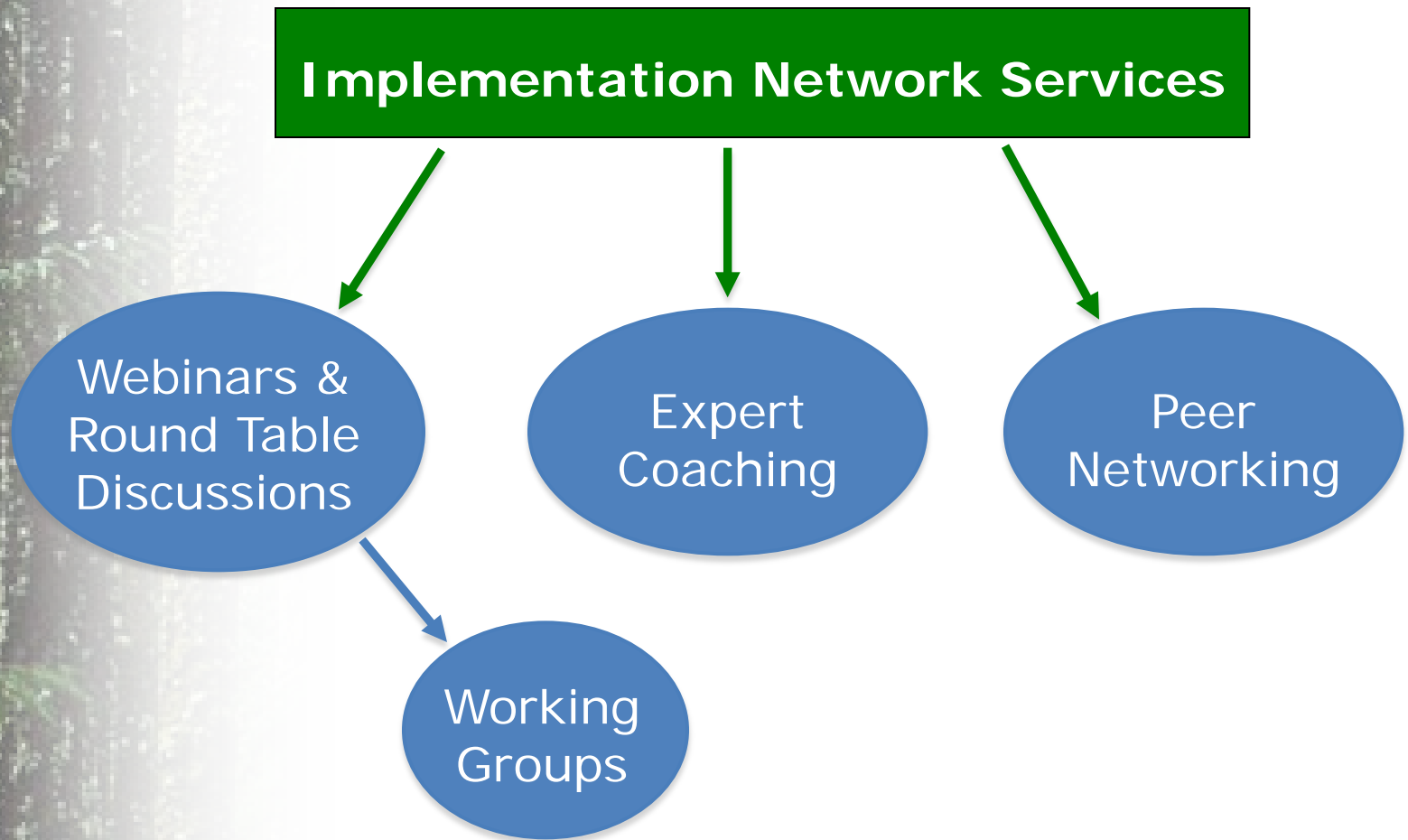
**So You've Got a Plan...**

**Now What?**





# What is the CSU Implementation Program?







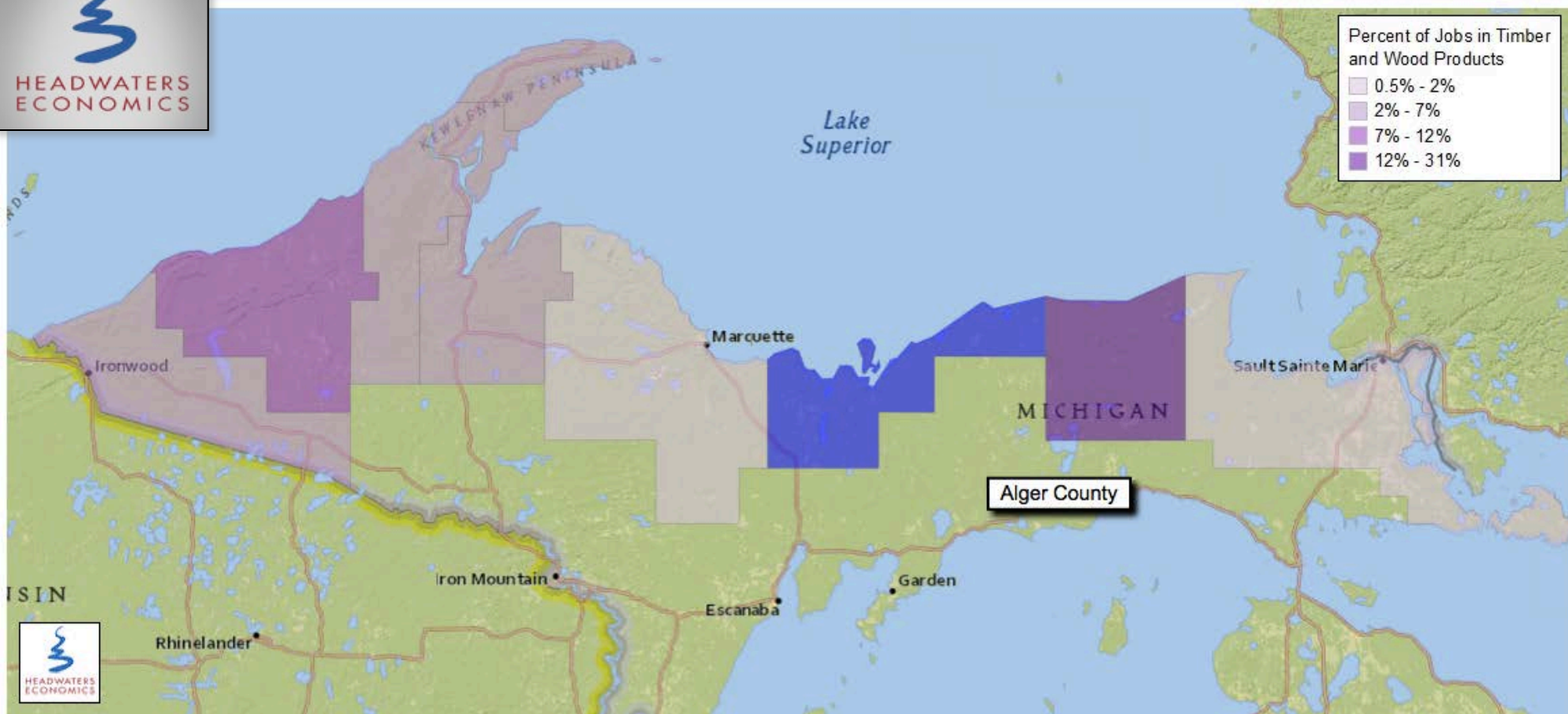
# Climate Impacts on the Economy: Alger County, MI







HEADWATERS  
ECONOMICS



## Why Is the Timber Industry Sensitive to a Changing Climate?

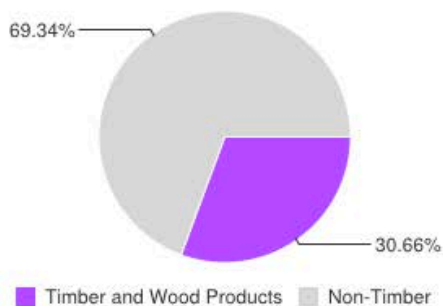
[Great Lakes Climate Information](#)

[The Timber Economy](#)

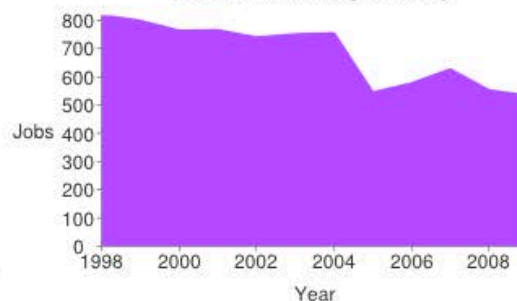
[Adaptation Plan for the UP \(5MB pdf\)](#)

Data source for base map: National Geographic (National Geographic, Esri, DeLorme, NAVTEQ, UNEP-WCMC, USGS, NASA, ESA, METI, NRCAN, GEBCO, NOAA, IPC) under CC-by-sa License

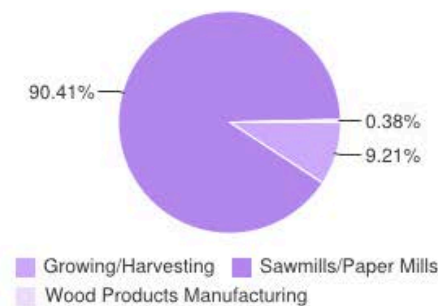
Jobs by Sector, Alger County



Jobs in Timber, Alger County



Jobs in Timber, Alger County





# A Policy Resolution in Support of Lakeshore and Riparian Restoration: Delta County, MI







# Team Development in Shasta County, CA

## Quasi-Governmental

- Resource Conservation District

## Governmental

- National Forest
- Dept. Water Resources
- Dept. Fish and Game
- National Recreation Area
- NRCS
- Water Quality Control Board
- Regional Transportation Agency
- College

## Private

- Electric Utilities Company
- Forest Land Mgmt Company
- Private Citizens
- Media



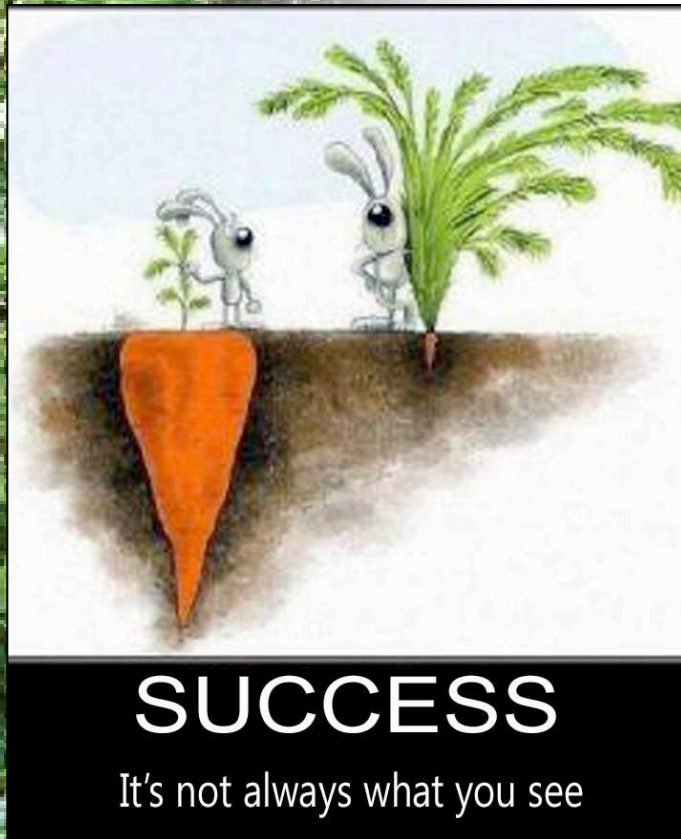


# On the Ground Restoration in Greene County, TN





# Components of Success



- Broad partnership and commitment to adaptation goals
- Dedicated coordinator
- Funding for coordination and implementation projects & tasks
- Demonstrating tangible outcomes
- Communicating climate impacts



# Pitfalls to Avoid



- Doing it all yourself
- Dependence on a single leader
- No back-up plan for succession
- Waiting to build capacity and raise funds for implementation





**MODEL FOREST POLICY PROGRAM & CUMBERLAND RIVER COMPACT**





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# Colorado Case Study

Mountain Studies Institute

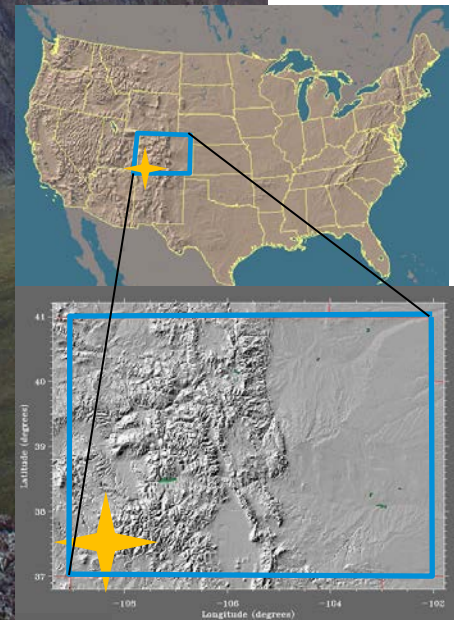
Durango, Colorado

**Marcie Bidwell**  
**Executive Director**



# Success Through Collaboration – CO

## San Juan Climate Initiative, SW Colorado Marcie Bidwell, Mountain Studies Institute





# Four Step Adaptation Process

1. Community Leader Forms Team / Leads Team Engagement
2. Assessment of Forest, Water, Climate, and Economic Risks and Opportunities
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# San Juan Climate Initiative

## What is it?

- Stakeholder- and scientist-driven effort
- Grassroots funding
- Place-based & collaborative

## Goals?

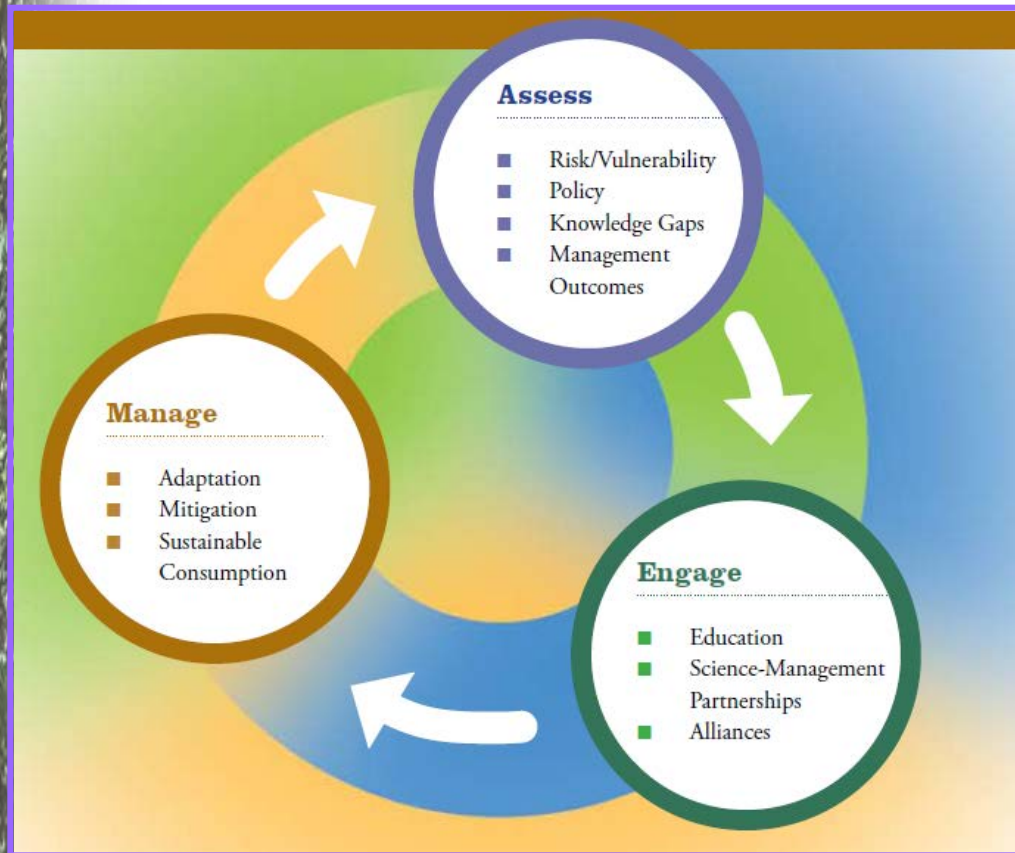
- Assess existing and potential threats caused by climate change.
- Develop strategies to plan for, adapt to, and reduce the effects of climate change on ecosystems and society.
- Preparing stakeholders for a changed climate future.





# Community Perspective

## ➤ Shared Climate Resilience Goals



## USFS Climate Objectives

**Goal 2:** Ensure our national forests and private working lands are conserved, restored, and made more resilient to climate change, while enhancing our water resources

## San Juan Climate Initiative

***Grassroots stakeholder- and scientist-driven effort to:***

- *assess existing and potential threats caused by climate change.*
- *develop strategies to plan for, adapt to, and reduce the effects of climate change on ecosystems and society.*





1. Review and Complete GHG baseline
2. Set percentage-based GHG targets
3. Provide recommendations to reduce GHG
4. Begin a process for climate adaptation

# **LA PLATA CLIMATE & ENERGY ACTION PLAN**

**CEAP Colorado's Energy Economy Strong**

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**CEAP Colorado Resilient to Climate Change**



# Goal of Climate Change Preparation Group:

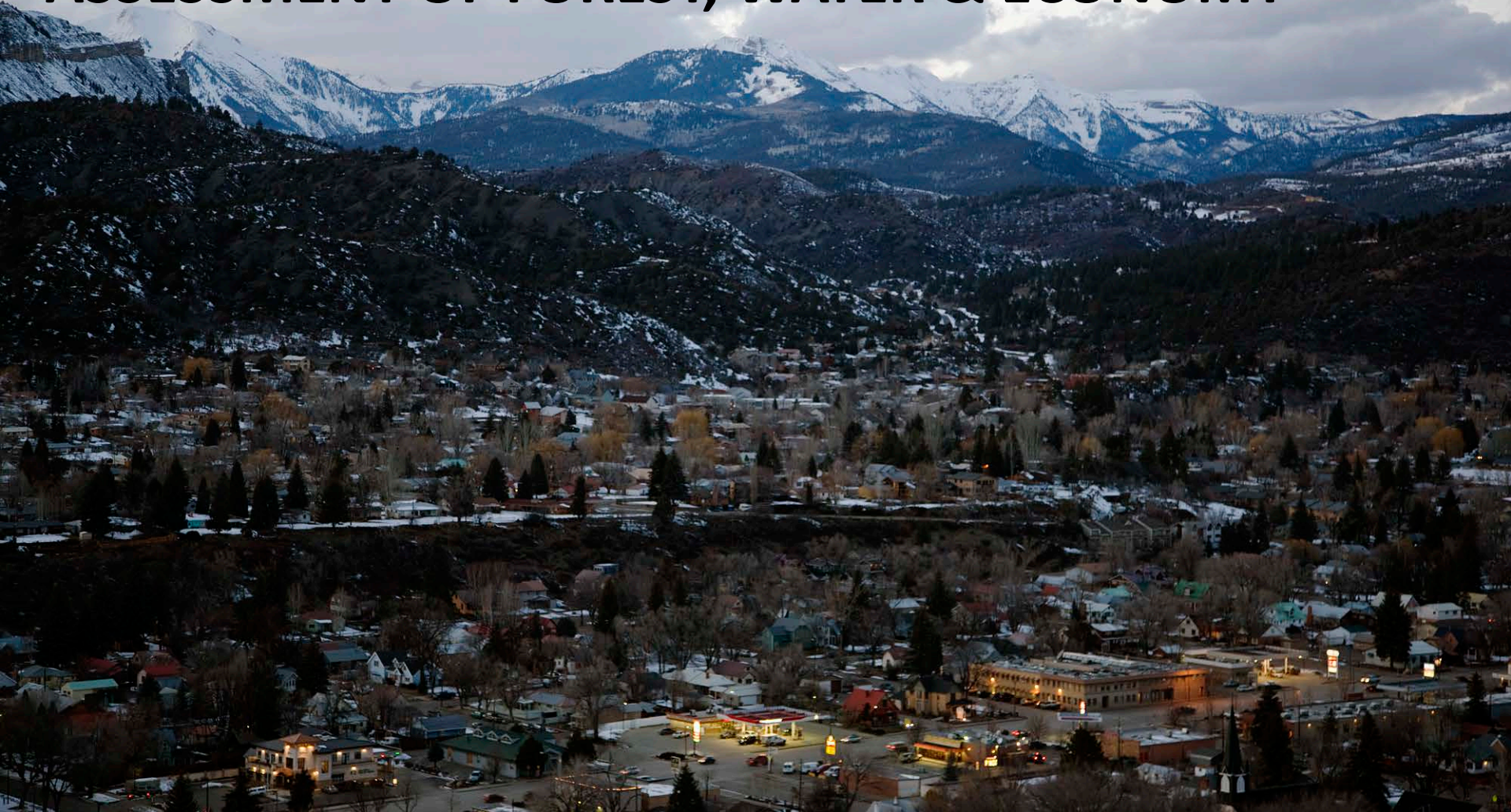
*To facilitate our community's ability to become Climate Resilient.*





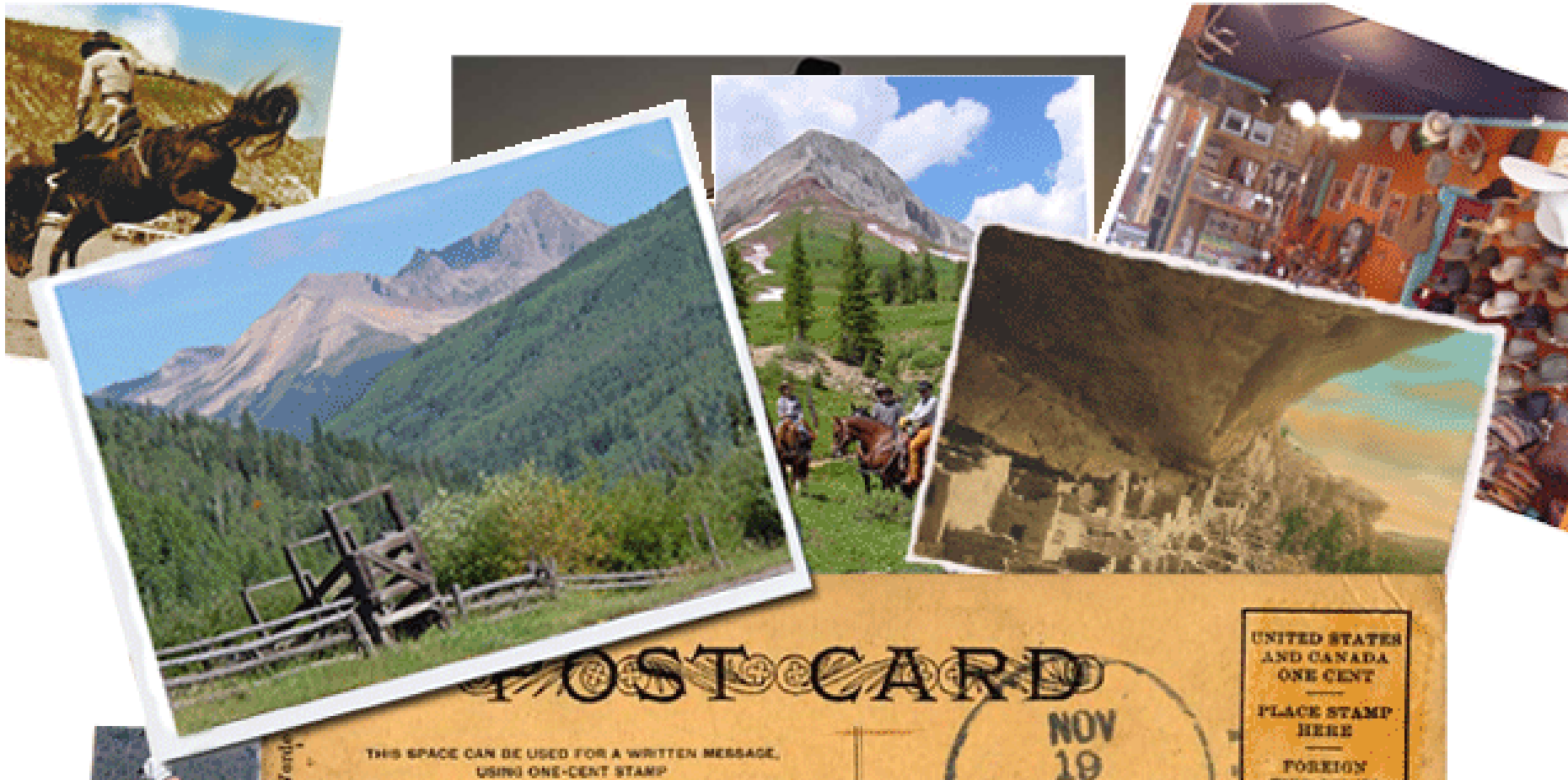
# **INTRODUCTION TO SW COLORADO**

## **ASSESSMENT OF FOREST, WATER & ECONOMY**



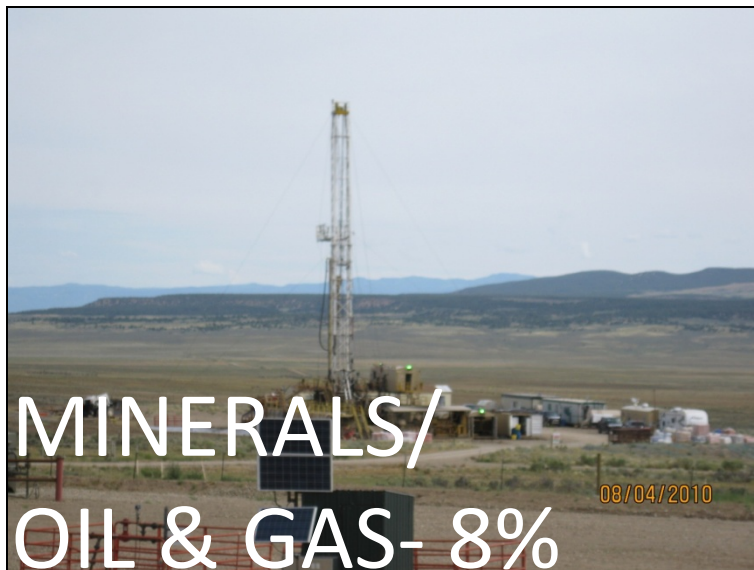


# IMAGE OF THE OLD WEST





# TRUE NEW WEST ECONOMY





# HOME OF UNTAMED WESTERN RIVERS

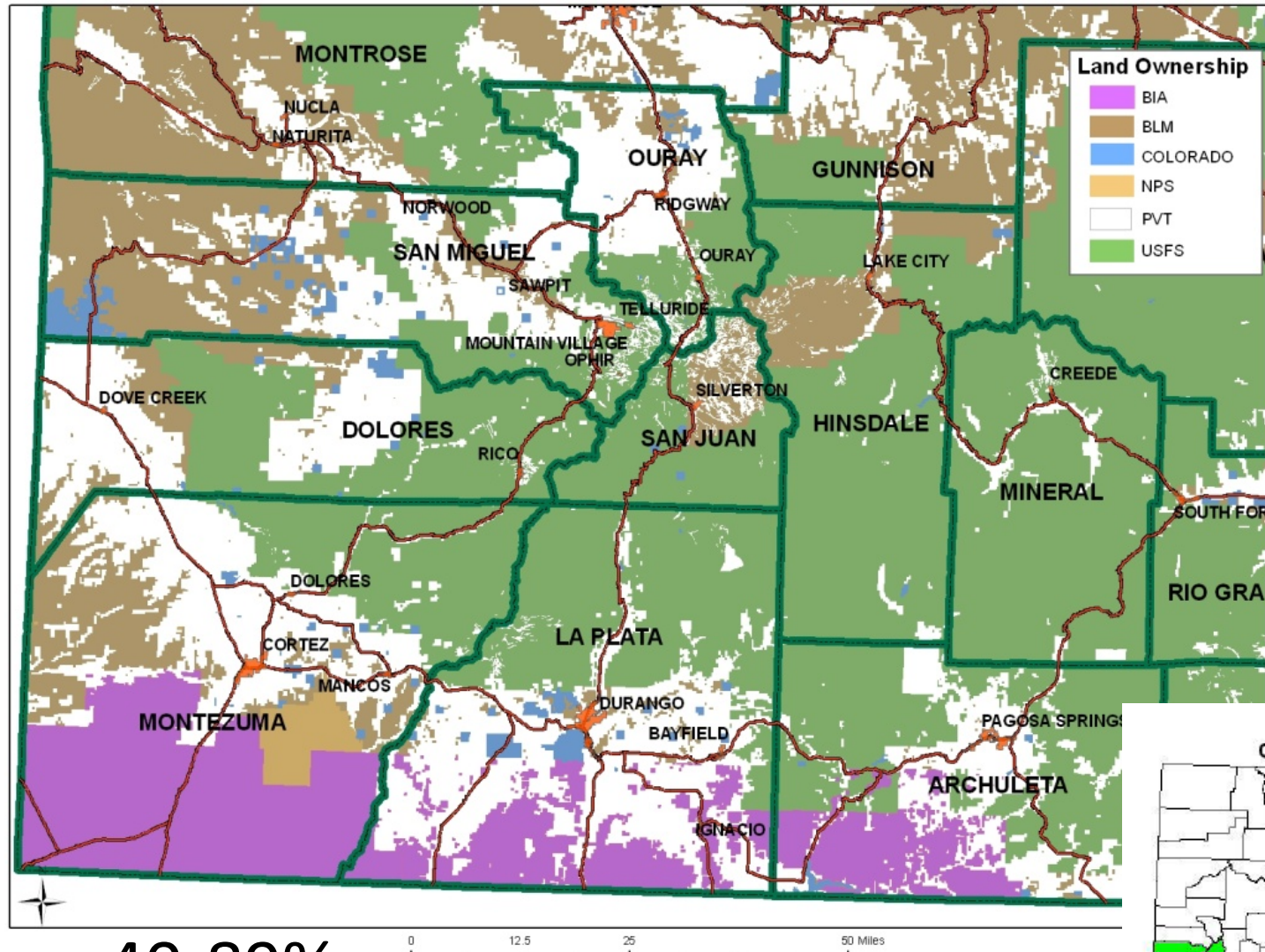
Animas, San Juan, and Uncompaghre Rivers of the  
Colorado River Basin & Rio Grande River

**7.8 Million acre feet  
75% California, Arizona, Utah,  
Nevada, Wyoming**



# LAND BASE= 69% PUBLIC LANDS

San Juan Mountains, Land Ownership

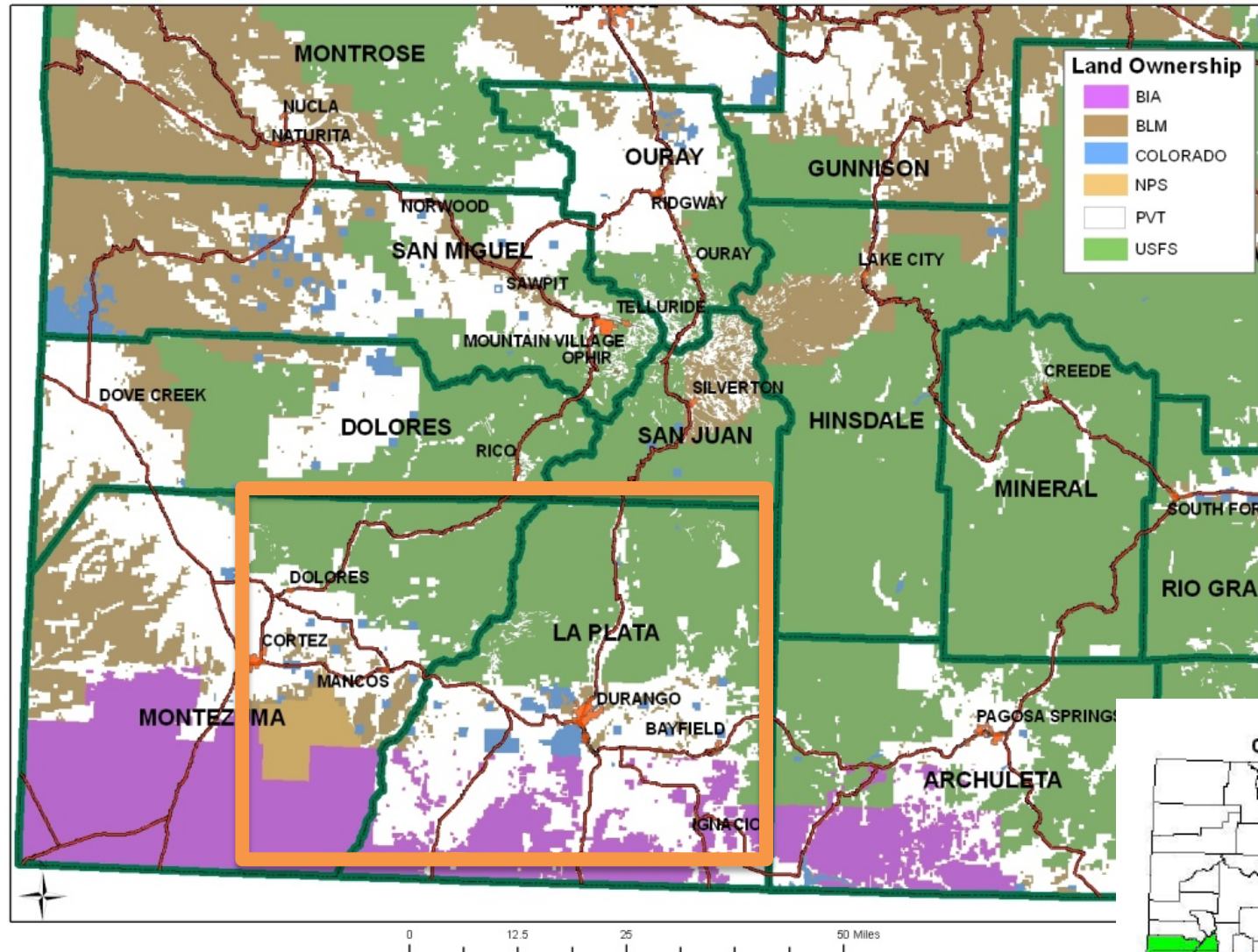


- Range 40-89%



# LAND BASE= 69% PUBLIC LANDS

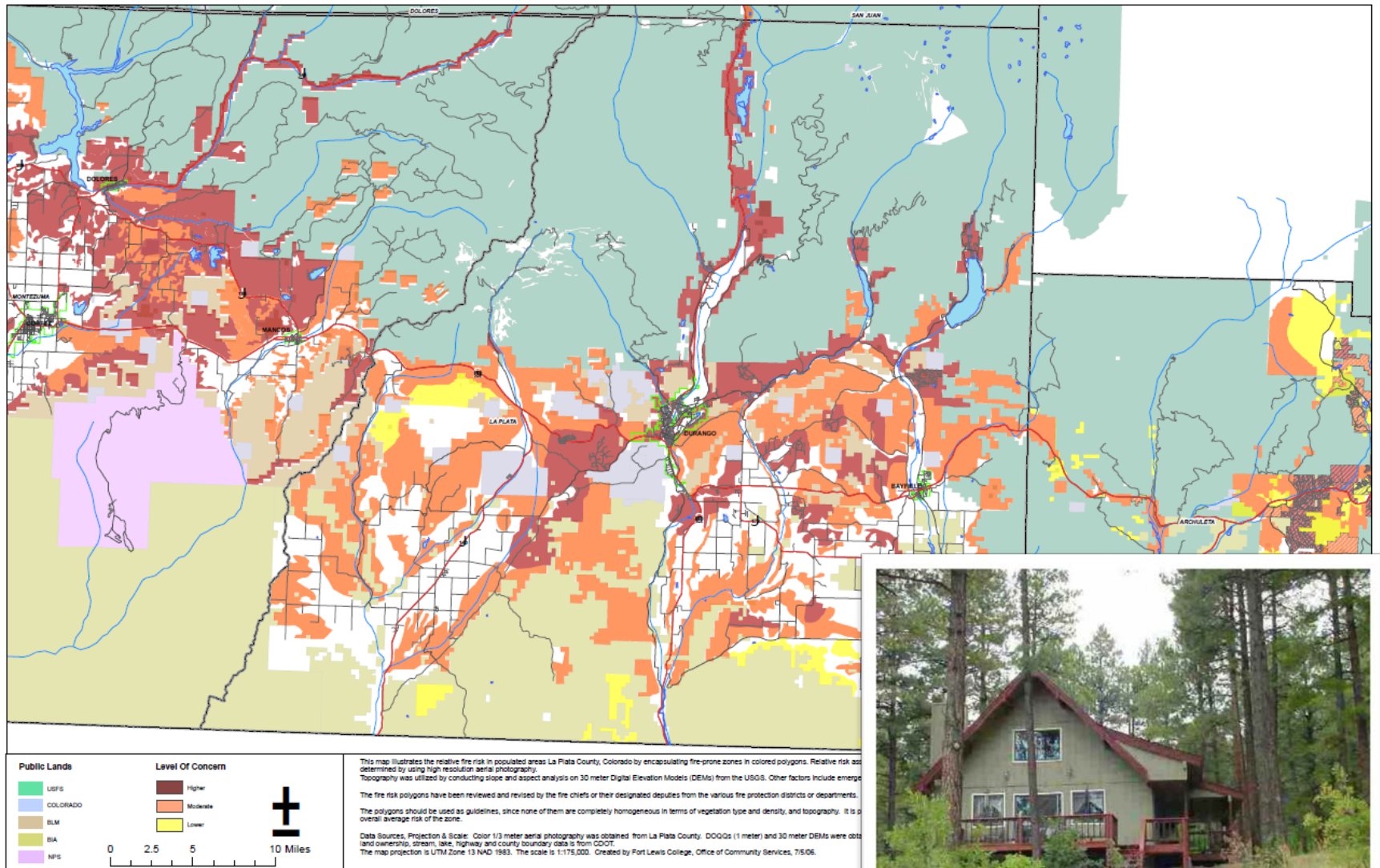
San Juan Mountains, Land Ownership



- Range 40-89%



# LIVING IN WILDLAND-URBAN INTERFACE



Moderate Risk



High Risk



# OBSERVED CLIMATE TRENDS & ECOSYSTEM RESPONSES





# ASSESS VULNERABILITY & CHANGE

## Climate Change Science & Adaptation Planning

### **Climate Change Assessment for the San Juan Mountain Regions, Southwestern Colorado, USA: A Review of Scientific Research**

Koren Nydick, PhD  
Executive Director  
Mountain Studies Institute

Julie Crawford, PhD  
Adjunct Scientist  
Mountain Studies Institute

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*Prepared in Cooperation with  
The San Juan Public Lands Center: USDA Forest Service – San  
Juan National Forest and USDOl Bureau of Land Management*

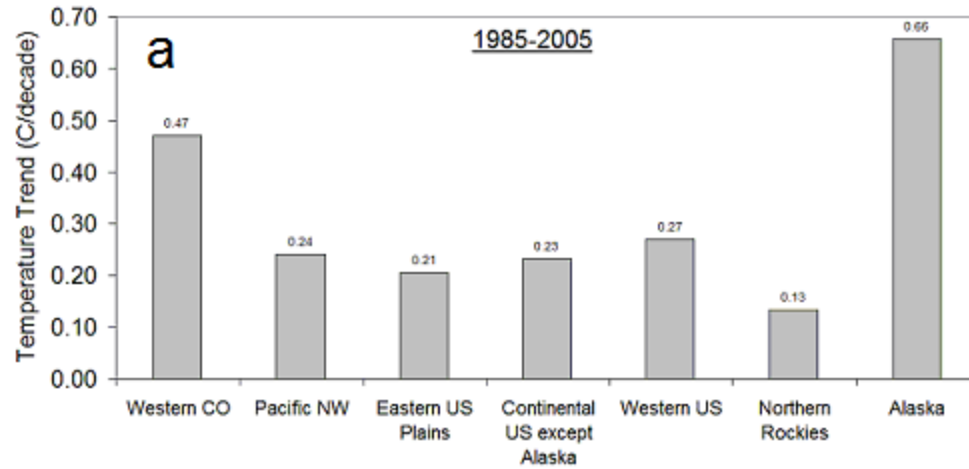


### **Completed:**

- Downscaled Regional Climate Model-Temp/Precip
- Research Review & Climate Scenario
- Sensitive Wildlife Species Vulnerability Assessment
- Drought Assessment for Recreation & Tourism Vulnerability
- Carbon Assessment

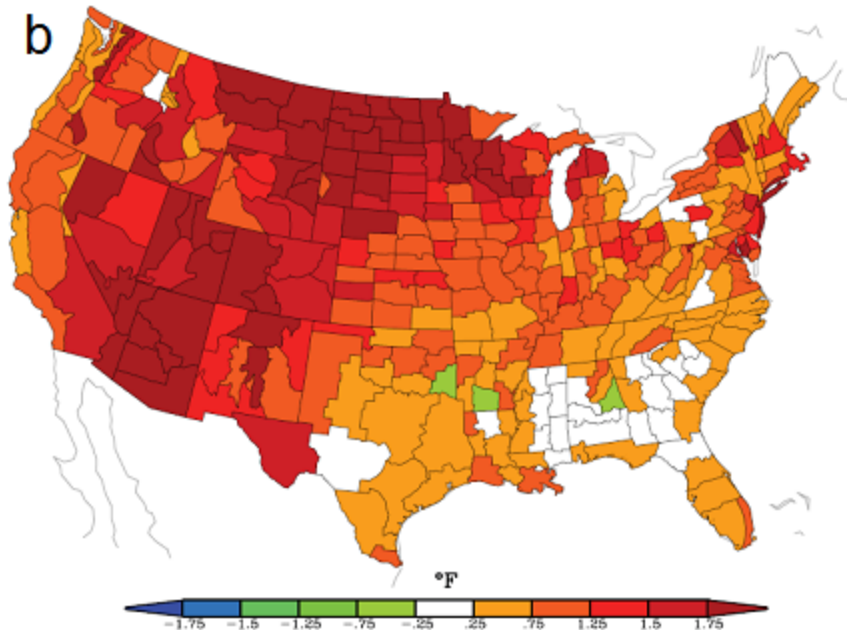


# SW Colorado region is already warming



Temperature trends (C/decade) across regions of the US for 1985-2005.

Trends are estimated using the 5° x 5° gridded GHCN (Global Historical Climatology Network) land surface dataset provided by NCDC, NOAA.



Average temperatures in 2000 - 2007 compared to averages for 1901 - 2000.

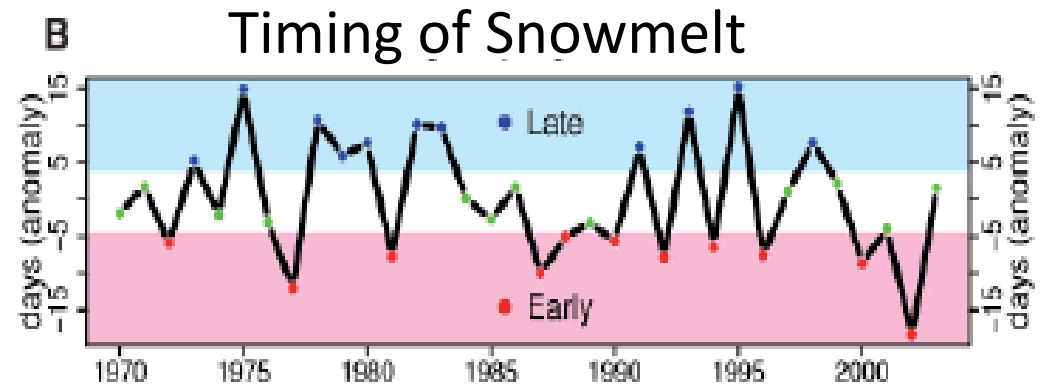
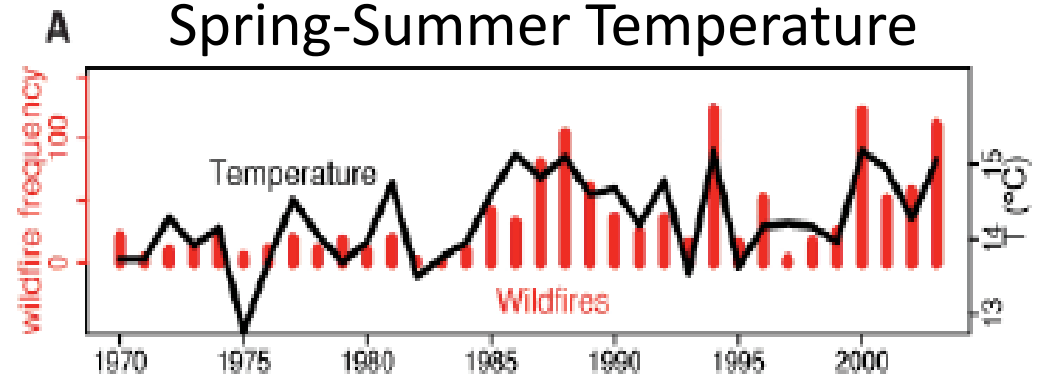
Source: Dr. Martin Hoerling, National Oceanic and Atmospheric Administration (reproduced from *Saunders et al.* [2008])



# Large wildfires increased dramatically in mid-1980s

- Snowmelt has shifted 2 weeks earlier in spring (Clow, 2010)
- Strongly associated with increased spring and summer temperatures and earlier spring snowmelt (Westerling et al 2006)

Western US Forest Wildfires and Spring-Summer Temperature



Westerling et al. 2006



# CLIMATE ADAPTATION





# What Can SW Colorado Do to Adapt?

## Manage GhG/Carbon



## A photograph showing a man and a woman in outdoor attire. The man, on the left, wears a green t-shirt and a light-colored cap, and is holding a plant. The woman, on the right, wears a white t-shirt, a dark cap, and a backpack, and is looking at the plant. They are in a field with trees in the background.

# Monitor Change

## Develop Partnerships



## Educate citizens



## Identify Key Species & Refuges

## Manage Forests







# LA PLATA CLIMATE & ENERGY ACTION PLAN

CEAP Colorado's Energy Economy Strong

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CEAP Colorado Resilient to Climate Change



# High Country News

For people who care  
about the West

[The Magazine](#) ▾ [Topics](#) ▾ [Departments](#) ▾ [Blogs](#) ▾ [Jobs & Classifieds](#) ▾ [Store](#) ▾

You are here: [home](#) | [Issues](#) | [Can evolution help snowshoe hares adapt to climate change?](#) | [Fearful of Agenda 21, an alleged U.N. plot,](#)

Topic: [Growth & Planning](#) Department: [Current](#)

## Fearful of Agenda 21, an alleged U.N. plot, activists derail land-use planning

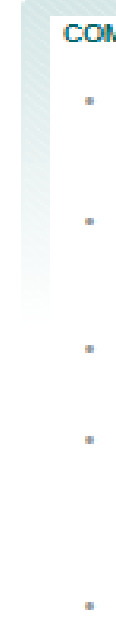
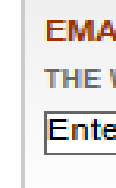
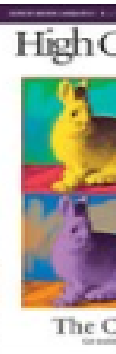
Share this:



NEWS - From the [February 08, 2012](#) issue

By [Jonathan Thompson](#)

In November, La Plata County Commissioner Kellie Hotter called local land-use planning "a blood sport." She wasn't kidding. Since last spring, as this southwestern Colorado county considered a new comprehensive land-use plan, carnage has piled up. By mid-December, casualties included a fired planning commissioner, a resigned county planning director and the plan itself -- a 400-page document that took two years, \$750,000 and 137 public meetings to produce. Even planning veterans in the rural West -- where it's not uncommon for mind-numbing meetings to erupt into verbal fisticuffs -- were shocked by the bloodshed in La Plata County. But perhaps most surprising was who emerged the untarnished victors: Activists who believe that smart growth, clustered development, smart meters and even bike paths are all part of a nefarious United Nations plot to rob citizens of their liberties. They may





# What specifically can we do about it?

## Original Draft Adaptation Plan & *adjusted goals*

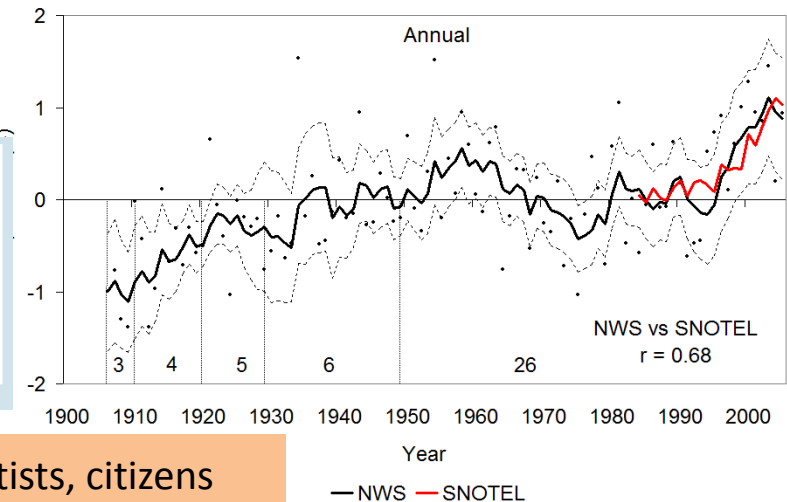
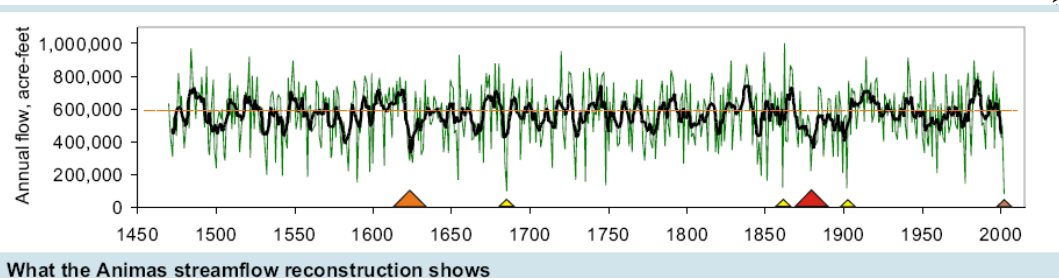
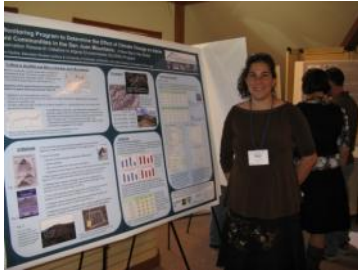
1. Reduce risk and mitigate impacts of catastrophic wildfire on high-risk forested *public* & private lands
2. Improve local ability to plan for and adapt to changes in water supply & quality
3. *Lead/collaborate in education/outreach efforts*
4. *Address impacts of drought and wildfire, rather than confront climate change “head-on”*



# COMMUNITY EDUCATION & OUTREACH

## Climate Change Science & Adaptation Planning

MSI, University of  
Colorado- Boulder, San  
Juan National Forest and  
BLM Tres Rios Field Office



- **Conferences and workshops** bringing together scientists, citizens and managers to discuss best available science & management practices
- **Restoration Generation:** College and High School intern programs
- **Booklets and videos** connecting to people's experiences



# ADAPTING THE RESTORATION GENERATION

## Field-based college & high school internships





# CITIZEN MONITORING PROGRAMS

## PikaNET: Volunteer Monitoring Network for the American Pika

MSI, CU Boulder, San Juan Public Lands, CSU, Denver Zoo, and other NGO partners



- SJNF & MSI helped fund and coordinate CU pika research
- Collaborative program born to recruit volunteers to fill data gaps and educate citizens
- Combines research and education
- Workshops started in 2010

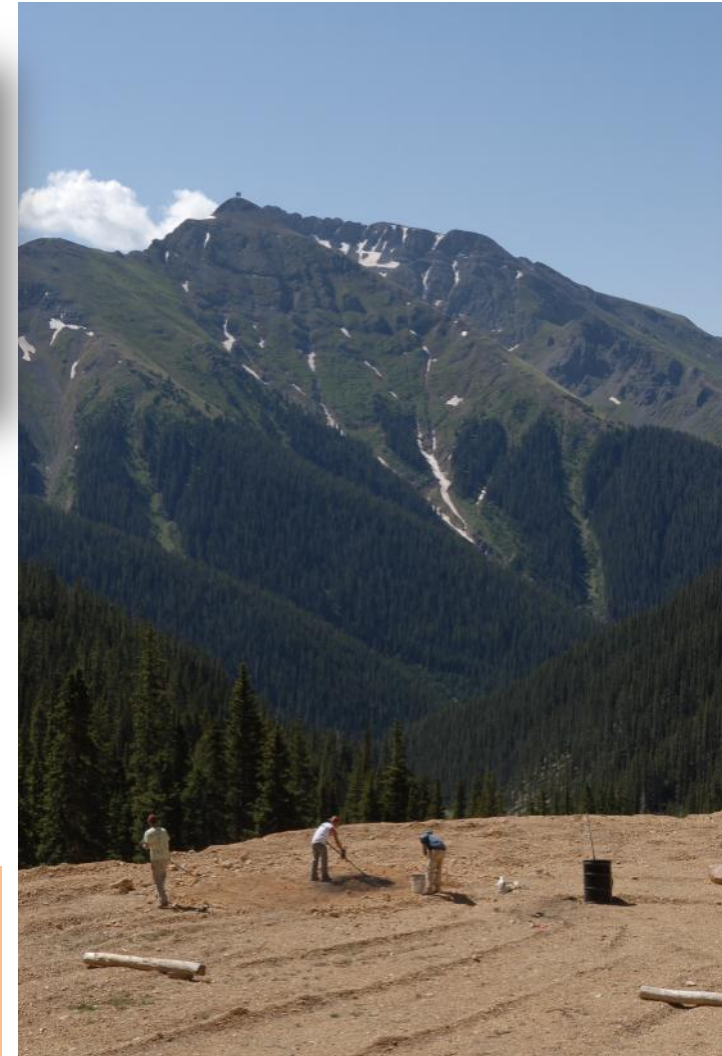




# TEST INNOVATIVE ADAPTATION STRATEGIES

## Biochar Re-Vegetation & Carbon Storage Project

MSI, San Juan NF, BLM  
and CU/FLC interns



- Experimental study to **test the success of using biochar** for **re-vegetation of damaged soils** (abandoned mine lands, gas well pads, recreation misuse)
- SJPLC is working on making biochar from local fuels project thinnings as a **carbon sequestration project**



# RESTORE RIPARIAN & WETLAND ECOSYSTEMS

MSI, Colorado State University,  
Michigan Tech University, and  
San Juan National Forest



- MSI and partners helped to **identify locations of rare and common wetland peatlands**, known as fens, in region
- Conducted **large scale assessment of condition** and distribution in SJNF
- **Initiated restoration** and experimented with new techniques for restoring backcountry and remote areas
- **SJNF initiated policy to manage for fens as sensitive areas**
- Conducting carbon sequestration experiments





# Conclusions for Adapting SW Colorado

## **What is happening now?**

- Warmer, Drier, Less Snow
- **Resources-** Forests, Water, Recreation, WUI
- Farming?** Always been marginal

## **What still needs to be done?**

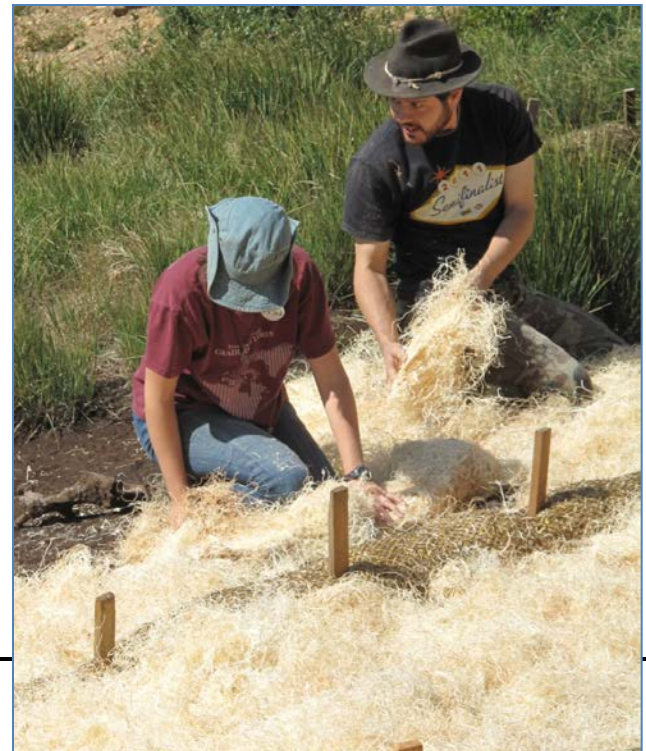
- Address impacts- wildfire, flooding, emergency services
- Communicate with decision makers with LOCAL info
- Make the adaptation link to industry and economy
- Focus on future decision makers & become a learning community



# Success Through Collaboration – CO

## What are our successes (so far)?

- Adapted our goals and approach
- Involve people in hands-on projects
- Peer-to-peer relationship between professionals, NGOs, and public
- Worked out mutually beneficial outcomes and deliverables
- Locally oriented and on-the-ground focused
- Target issues where people are feeling the impacts





## Beneficial Outcomes- Expected & Unexpected

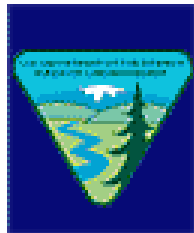
- On-the-ground results:
  - 100,000 trees planted
  - 10 acres of fens restored
  - Biochar incorporated into plantings and reclamation
- Synergy beyond single organizations or agencies
- Leverage funds and resources to extend missions
- Creates flexibility and creativity in audiences, dollars, and accomplishments





# Acknowledgements: Partners & Support

- San Juan Public Lands Center
- Mountain Studies Institute  
**[www.mountainstudies.org](http://www.mountainstudies.org)**
- Fort Lewis College **[www.fortlewis.edu](http://www.fortlewis.edu)**
- University of Colorado Boulder  
**[www.sjc.colorado.edu](http://www.sjc.colorado.edu)**
- **4CORE** [www.fourcore.org](http://www.fourcore.org)



**San Juan  
Public Lands  
Center**







# Sharing Ideas

**Share Your Ideas on Two Questions: (10 min)**

- **Planning question**
  
- **Implementation question**
  
- **Choose a Note Taker:**
- **Go around circle and share ideas**
- **Rank your Top 5 Ideas to report back**





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# Sharing Strategies for Funding Climate Adaptation Activities

The Model Forest Policy Program,  
Climate Solutions University

**Vanitha Sivarajan**  
Development Director





A small group of thoughtful people  
could change the world. Indeed,  
it's the only thing that has.  
-Margaret Mead

THE KRESGE FOUNDATION



# Funding Challenges for Rural Communities at the Community Level

- Funding adaptation:
  - on a national level
  - versus on-the-ground outcomes
  - versus hazard mitigation
- Rural communities' resources, capacity, access
- Moving from planning to implementation

**The Novice**





**When the winds of change blow,  
some people build walls and others  
build windmills.  
-Rishika Jain**





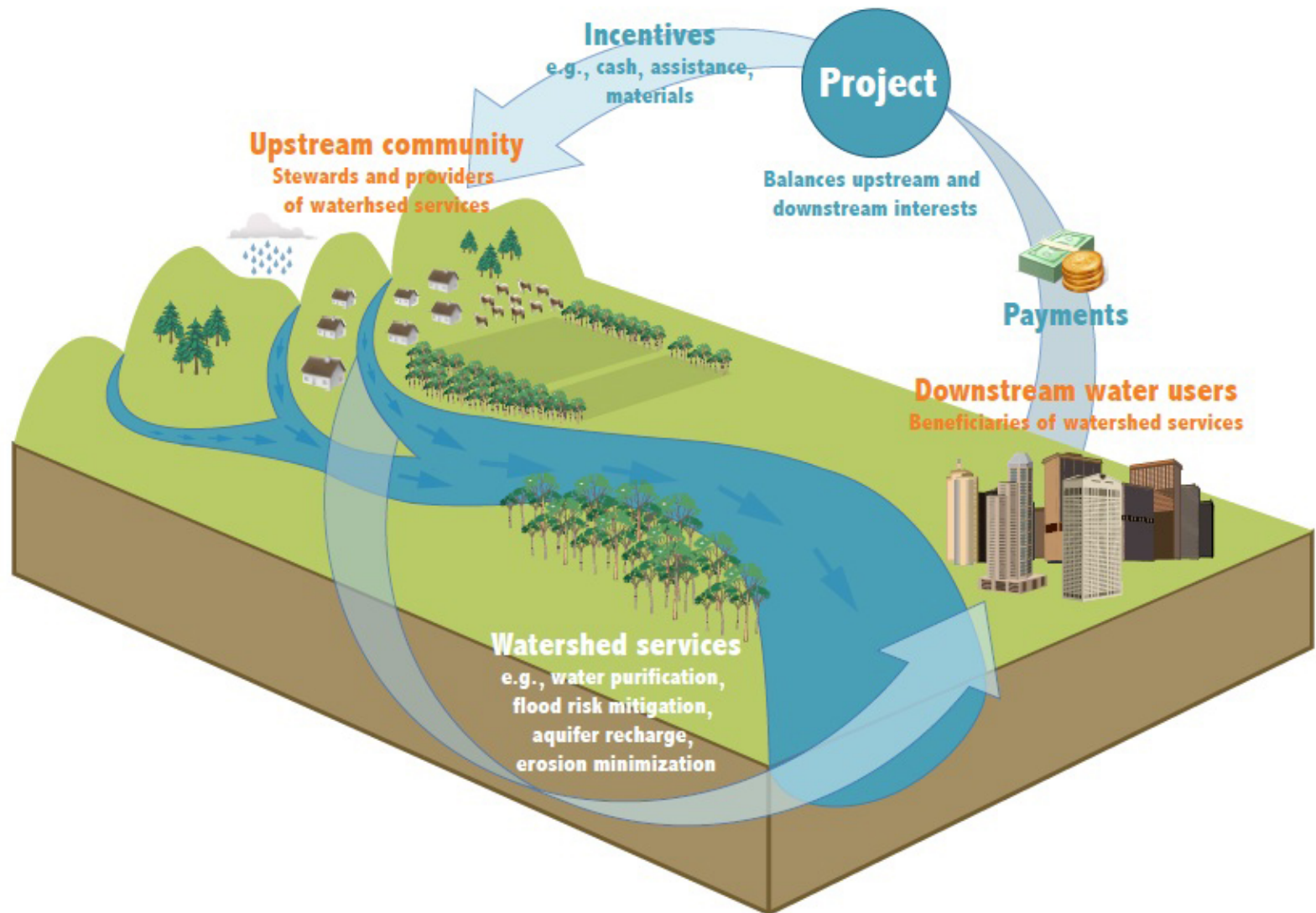
# Ex #1 of What Success Looks Like— Collaborative Fundraising

- SWP: shoreline erosion; shoreline protection zone
- Delta RCD: invasive species; restoration
- EPA GLRI: Increasing climate change resiliency in Great Lakes
- MFPP: build momentum in GL for adaptation
- Win-win for all





# Ex #2 of What Success *Could* Look Like— Payment for Ecosystem Services (PES) as Market Based Solution





# Developing PES Program in Upper Delaware Basin

- **Risk**: development & climate impacts; clean water & regulated stream flows to 16.2M people + businesses
- **Mechanism**: “Sellers”: rural private landowners; “Buyers”: water utilities, electric companies, insurance, etc.
- **Opportunity**: calculate forests’ econ value
- **Win-win for all**





# “Adapting” to Help our Rural Communities Become Climate Heroes

- Looking beyond the traditional donor model to create new alternative funding opportunities





# Creating New Opportunities for Successful Adaptation Funding

- Thinking of rural areas and their needs, what are new ways we can fund rural adaptation and implementation that I have not already covered?





# Creating New Opportunities for Successful Adaptation Funding for Rural Communities

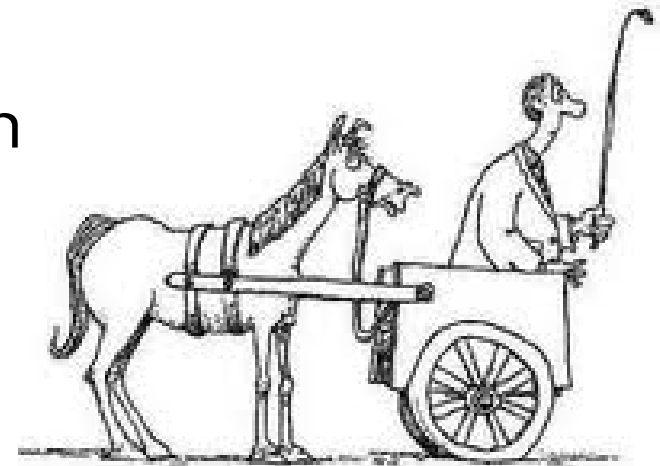
- Joint/collaborative fundraising
- Market-based solutions such as ecosystem services
- Public/private/nonprofit partnerships: water utilities, electric companies, industrial users, insurance companies
- Fee-for-services; revenue model; membership models
- Tapping into existing funding streams & diverting them for adaptation (FEMA)
- Capacity building, leadership grants





# Factors for Success for Funding Rural Communities at the Local Level

- Organizational capacity
- Strong community process & communications
- Time, resources, project lead
- Capacity, leadership, communications, partnerships
- Clearly defined goals, roles when collaborating
- Technical assistance
- Don't go it alone!







# Today's Symposium Outline: Elements of Effective Implementation

- **Goals for Today's Dialogue**
- **Overview Climate Solutions University**
- **Elements of Planning**
- **Elements of Implementation**
- **Case Study from Colorado**
- **Elements of Funding**
- **Sharing and Using New Ideas**



# What are Successful Adaptation Outcomes?

- **Ultimately more healthy people, forests, waters, and economic stability**

## How to get there?

- Educate & empower community and leaders
- Invest in mitigation & adaptation
- Integrate climate into decision making
- Improve public policy
- Conserve and restore on-the-landscape





# Sharing and Using New Ideas

**What ideas from today will you take back with you to act upon and how?**



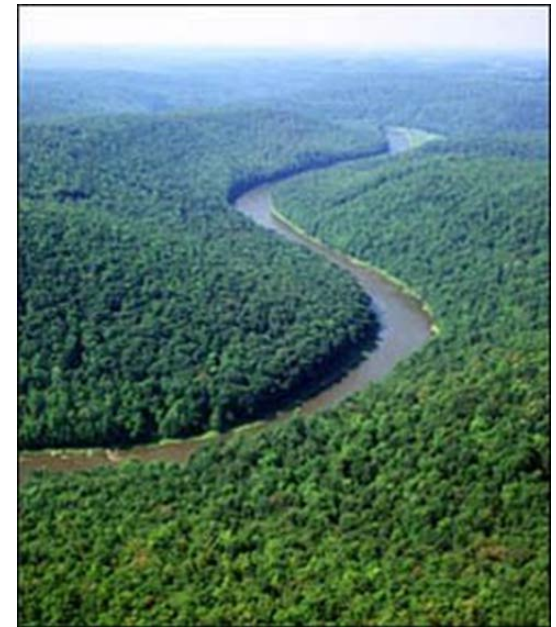
# Going Forward

- Climate Solutions University: Applications open now for CSU 2014
- Plan Development Program
- Implementation Program
- Details at [www.mfpp.org](http://www.mfpp.org)

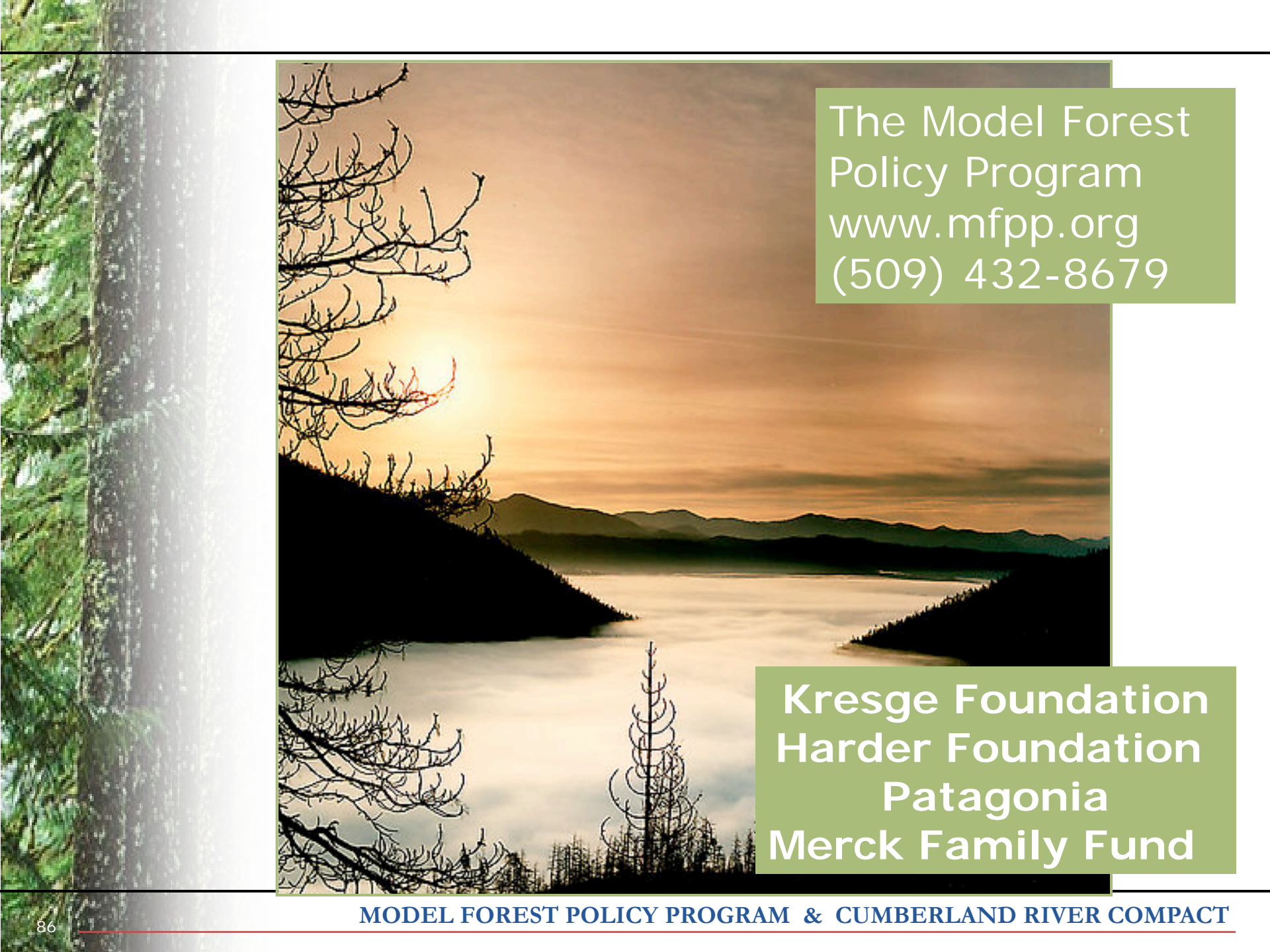
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Kresge Foundation  
Harder Foundation  
Patagonia  
Merck Family Fund